

WSW. gale, barometer 29.90. 28th, 54° 53' N., 14° 20' W. fierce NW. squalls, with hail and rain; 49° 08' N., 16° 49' W.; NW. fresh gale and hard squalls; 28° N., 70° W., heavy W. gale veering to NE., lasting 24 hours. 30th, 30 miles E. of Cape May violent E. gale; 32° 54' N., 77° 32' W., gale from SE., hauling to W. and NW., lasting 3 days. 31st, 40° 34' N., 70° 50' W., strong NE. gale and heavy snow-storm; 44° 40' N., 44° 56' W., thunder-storm from SW., followed by heavy NW. gale; 40° N., 73° 25' W., gale from E., with snow; 35° 03' N., 66° W., noon, heavy SE. gale veering to SW.; midnight, NW. gale, lasting until February 2d; 34° 26' N., 75° 50' W., heavy ESE. gale, lasting 24 hours; 100 miles E. of Sandy Hook. E. to SE. hurricane, lasting 12 hours; 37° N., 75° W., gale ENE., tremendous sea; about 49° 30' N., 5° W., strong S. gale veering to W., followed February 1st by very high sea. February 1st, 40° N., 73° 25' W., gale NE. and snow; 43° 21' N., 50° 07' W., 46° 44' N., 48° 10' W., 47° 28' N., 38° 31' W., and 49° 38' N., 40° 26' W., heavy NW. gales and seas; 46° 14' N., 40° 17' W., furious SW. to NW. gale, immense sea; 47° 41' N., 37° 36' W., strong SW. gale, with hard squalls. 2nd, 44° 48' N., 44° 51' W., gale. 4th, 49° 37' N., 31° 19' W., strong S. gale, with high sea. 5th, 54° 31' N., 18° 54' W., strong WSW. gale and hard squalls; 34° 29' N., 23° 13' W., heavy SW. gale, veering to NW., lasting 24 hours; off the Banks of Newfoundland, terrible E. snow-storm, with tremendous sea; 49° N., 55° W., heavy gale. 6th, 44° 11' N., 53° 27' W., strong gale from SE. to NW.; 42° 40' N., 52° 02' W., strong SW. gale; 28° 04' N., 60° 31' W., terrific squalls, followed by NW. gale, lasting through the 7th; 54° 02' N., 26° 04' W., hard SSW. gale; 46° 29' N., 43° 02' W., and 50° 23' N., 19° 13' W., strong S. gale; 46° 53' N., 34° 26' W., heavy SE. gale; 40° N., 42° W., hurricane, with terrific cross-seas. 7th, 44° 25' N., 53° W., hurricane from N.; 46° N., 44° W., hurricane, SW. to NW.; 43° 14' N., 56° 32' W., strong NNW. gale; 41° 54' N., 54° 56' W., very heavy W. gale; 45° 13' N., 45° 54' W., strong gale. 8th, 42° 30' N., 60° 08' W., and 43° 53' N., 48° 38' W., strong NW. gales. 9th, 45° 02' N., 44° 50' W., heavy NW. gale and very high seas. 10th, 33° 22' N., 68° 07' W., gale from ENE.; 44° 32' N., 48° 08' W., strong WNW. gale. 11th, 35° 40' N., 73° 35' W., heavy WSW. gale. 13th, 44° 29' N., 47° 41' W., strong NW. gale; 46° 36' N., 38° 07' W., heavy NW. gale, with violent squalls and snow. 14th, 45° 06' N., 41° 52' W., heavy NW. gale and hail-squalls; 47° 13' N., 38° 04' W., hard SSW. to WNW. gale; 50° 30' N., 36° 42' W., violent NNW. gale, fierce squalls, snow and sleet; 48° 53' N., 36° 02' W., heavy NW. gale; 48° 55' N., 34° 33' W., strong and violent S. to NNW. gales, with terrific squalls and high, confused sea. 15th 35° N., 67° W., S. gale; 44° 02' N., 44° 50' W., 45° 35' N., 42° 25' W., 48° 49' N., 38° 47' W., and 48° 26' N. 38° 01' W., hard NW. and W. gales, with fierce squalls, snow and sleet. 16th, 47° 21' N., 42° 15' W., 50° 17' N., 29° 21' W., and 49° 5' N., 26° 34' W., strong NW. to SW., gales, with hard snow-squalls. 17th, 48° 57' N., 35° 28' W., and 49° 29' N., 31° 55' W., strong NW. gales, with heavy squalls; 55° 20' N., 9° 21' W., and 55° 25' N., 9° 48' W., strong southerly gales. 18th, 47° 69' W., NNE. gale, lasting 36 hours; 46° 43' N., 40° 41' W., violent gales, (W.-E.-N.); 48° 45' N., 39° 08' W., strong SW. to SE. gale; 55° 18' N., 13° 11' W., strong NW. to SW. gale; 50° 37' N., 27° 40' W., heavy NW., to S. gale. 19th, 32° N., 73° W., violent NW. and SE. gales, with heavy rain; 42° 12' N., 64° 28' W., N. gale; 44° 47' N., 45° 26' W. violent NW. to SSW. gale; 47° 20' N., 42° 59' W., hurricane-like gale from NE. to W., with tremendous sea; 54° 23' N., 19° 21' W., severe NW. gale, high sea; 50° 05' N., 20° 32' W., and 49° 40' N., 19° 42' W., heavy SW. gales; 25° N., 63° W., heavy SW. to NW. gale, lasting 12 hours. 20th, 43° 37' N., 48° 56' W., violent to moderate SSW. to NW. gale; 46° 21' N., 49° 28' W., strong SSW. to NNW. gale; 53° 51' N., 22° 09' W., hard WNW. to WSW. gale; 50° 56' N., 27° 37' W., hard NW. gale, with terrific squalls; 49° 42' N., 26° 55' W., heavy westerly storm; 49° 34' N., 21° 27' W., strong SW. to NW. gale with heavy squalls. 21st, 52° 54' N. 26° 20' W., and 49° 17' N., 25° 26' W., strong SW. gales; 48° 07' N., 35° 57' W., hurricane from W., with very heavy sea. 22d, 36° N., 72° W., violent SE. gale, lasting 48 hours; 52° 34' N., 29° 17' W., 48° 05' N., 34° 30' W., 48° 31' N., 37° 52' W., and 48° 37' N., 37° 51' W., strong and hard W. to SW. gales; 28° N., 79° W., heavy NNW. gale and sea, lasting 12 hours. 23rd, two hundred and fifty miles SW. of Bermuda, heavy NW. gale; 47° 49' N., 35° 34' W., furious E. gale, with violent squalls and constant heavy rain. 24th, 49° 12' N., 41° 04' W., strong ENE. gale; 43° N., 53° 21' W., SE. gale; 45° 04' N., 41° 12' W., violent NE. storm, mountainous sea. 25th, 37° N., 73° 40' W., heavy NW. gale, lasting 48 hours. 26th, 43° 26' N., 48° 34' W., heavy NE. squalls, with heavy rain and snow. 27th, 43° 39' N., 56° 40' W., 45° N., 45° 36' W., and 35° 53' N., 71° 52' W., heavy NW. gales.

## TEMPERATURE OF THE AIR.

*In General.*—The general distribution of the temperature of the air is shown by the isotherms on chart No. II. By reference to the table of comparative temperatures, in the left-hand corner of same chart, it will be seen that the high temperatures existing during January have continued, in a still more marked degree, throughout the present month. The largest deviation occurs in Minnesota, where the mean temperature of four stations is 18°.7 above the normal. In the Missouri and Upper Mississippi valleys and Upper Lake region the excess is from 9° to 16°; thence eastward to the Atlantic coast and St. Lawrence valley from 4° to 5°, and from the Ohio valley to the Gulf coast and in the Rocky mountain region from 2° to 3°. In the Pacific and South Atlantic coast States the excess is quite small.

*Monthly mean temperatures at special points* have been as follows: Pike's Peak, 2°.5; Mt. Washington, 10°.2.

*Maximum and Minimum Temperatures.*—Maximum temperatures, at Signal Service and voluntary stations above 70°, are reported as follows: 85° at Flatonía, Fla.; 81° at Fredericksburg, Tex.; 80° at Stockton, Cocho, Fort Griffin, Fort McKavitt, Tex., and Okahumpka, Fla.; 79° at Mason, Tex.; 78° at Jacks-

boro' and Austin, Tex.; 77° at Fort Sill, Ind. Ter.; 76° at Decatur, Tex., South Pueblo, Col., and Daytona, Fla.; 75° at Oglethorpe Barracks, Ga., Clarksville, Tex., and Savannah, Ga.; 74° at Huston, and Jacksonville, Fla.; Quitman, Ga., and Belmont Farm, Tex.; 73° at Weldon, N. C.; 72° at Great Bend and Kingsly, Kan., Fort Barrancas, Fla., Judsonia, Ark., Alto Vista, Va., and Cape Henry; 71° at Augusta, Wilmington, Los Angeles, New Orleans and Fort Monroe, Va.

*Minimum Temperatures*, at Signal Service and voluntary stations, were: —22° at Woodstock, Vt.; —20° at Newport, Vt., and Nile, N. Y.; —19° at Pikes Peak; —18° at Summit, Col., and Billerica, Mass.; —17° at Mt. Washington and Waterbury, N. Y.; —16° at Fort Garland, Col., Cooperstown, N. Y., Orono, Me., and Westboro, Mass.; —15° at Fort Sanders, Wy. Ter., and Dumbarton, N. H.; —14° at Tioga, Pa., Dudley, Col., Detroit, Mich., and Cazenovia, N. Y.; —13° at Wappinger's Falls, N. Y., and Lunenburg, Vt.; —11° at Contoocookville, N. H., and Williamsport, Pa.; —10° at West Waterville, Me., and Palermo, N. Y.; —8° at Waltham, Mass., Franklin, Pa., Mechanic's Falls, Me., Plattsburg Barracks, N. Y., and Fort Fred Steele, Wy. Ter.; —7° at Albany, N. Y.

*Ranges of Temperature*.—Largest monthly and diurnal ranges have been, respectively, as follows: Cheyenne, monthly, 64°, diurnal, 44°; Griffin, 61° and 47°; Stockton, 61° and 46°; McKavitt, 61° and 43°; Yankton, 59° and 32°; Jacksboro', 57° and 41°; Mason, 57° and 40°; Cleveland, 56° and 27°; Breckenridge, 55° and 38°; Fort Sill, 55° and 40°; North Platte, 54° and 36°; Omaha, 52° and 27°; Dodge City, 52° and 37°; Pembina, 52° and 38°; St. Paul, 52° and 32°; Oswego, 52° and 35°; Boston, 52° and 31°.

*Small monthly and diurnal ranges* have been as follows: San Francisco, 20° and 13°; Sacramento, 21° and 16°; Red Bluff, 25° and 22°; Cape Hatteras, 28° and 21°; Boise City, 29° and 21°; Visalia, 30° and 24°; Los Angeles, 30° and 23°; Cape Lookout, 31° and 20°; Indianola, 32° and 23°; Galveston, 33° and 16°; Cairo, 33° and 24°; Smithville, 33° and 25°; Charleston, 35° and 20°; Cape May and Sandy Hook, 36° and 18°; Wood's Holl, 35° and 21°.

*Frosts* have been reported nearly every day in the Northwest, Lake region and northern portion of New England; and in the other sections east of the Rocky Mountains, generally from the 1st to the 6th, 11th to 13th, on the 19th and 20 and from the 26th to the 28th.

*Ice* is reported to have formed as follows: In Kansas from the 1st to the 4th, 9th to 12th, and on the 24th; in Texas on the 11th; Mississippi, 1st, 5th, 11th and 12th; Florida, 12th; New Jersey, 7th and 18th, and in Massachusetts on the 21st.

## PRECIPITATION.

*In General*.—The general distribution of rain (and melted snow) for the month, is shown on Chart No. III. By reference to the table in the lower left hand corner of same Chart, it will be seen that there has been a very large excess in the Pacific coast States, and a general deficiency east of the Rocky Mountains, which is most marked in Tennessee, the Ohio valley, East Gulf and Middle Atlantic States. In the Lower Lake region and New England, a small excess occurs. The heavy rains in the Pacific States, resulted in extensive flows, of which a short account is given below.

*Special Heavy Rains*.—1st, Westboro, Mass., 2.39 inches. 6th, Baton Rouge Barracks, La., 1.85 in.; New Orleans, La., (6th and 7th) 2.08 in.; Denison, Tex., (6th and 7th) 2.27 in.; Corsicana, Tex., (6th and 7th) 2.22 in. 14th, Spring Garden, Tenn., (14 and 15th) 2.40 in.; Red Bluff, Cal., (13 and 14th) 3.25 in. 15th, Los Angeles, Cal., 1.78 in.; Santa Cruz, Cal., 1.70 in. 17th, Red Bluff, Cal., 2.41 in.; San Francisco, Cal., 1.92 in.; 20th, Red Bluff, Cal., 2.02 in.; Fort Gibson, Ind. Ty., 2.06 in. 22nd, New York City, 2.11 in.; New Haven, Conn., 4.13 in.; Springfield, Mass., 2.20 in.; Westboro, Mass., 2.51 in.; West Chester, Pa., 2.36 in.; Green Castle, Pa., (21st and 22nd) 2.07 in.; Thatcher's Island, Mass., 3.01 in.; Fort Preble, Me., 3.30 in.; Alpena, Mich., (21st and 22d) 2.34 in.; Wilmington, N. C., (21st and 22) 2.26 in. 25th, Fort Duncan, Tex., 1.80 in.; Red Bluff, 1.99 in.

*Large Monthly Rain-falls*.—At Red Bluff, Cal., 16.66 in.; Santa Cruz, Cal., 16.04 in.; Olympia, Wash. Ty., 15.50 in.; San Francisco, Cal., 12.52 in.; Portland, Or., 12.16 in.; Okahumpka, Fla., 10.80 in.; Salinas, Cal., 8.77 in.; Sacramento, Cal., 8.07 in.; Los Angeles, Cal., 7.68 in.; Daytona, Fla., 7.64 in.; Roseburg, Or., 7.30 in.; Cambridge, Mass., 6.59 in.; New Haven, Conn., 6.40 in.; Westboro, Mass., 6.12 in.; Spring Garden, Tenn., 6.00 in.

*Small Monthly Rain-falls*.—At Fort Lyon, Col., Vail, Iowa, and Fort Hartsuff, Neb., none; Fort Union, N. M., trace; Fort Griffin, Tex., 0.02 in.; Sydney Barracks, Neb., 0.06 in.; Yuma, A. T., 0.06 in.; Cheyenne, Wy. Ty., 0.13 in.; Omaha, Neb., 0.14 in.; Plattsmouth, Neb., 0.15 in.; Fort McPherson, Neb., and Tabor, Iowa, 0.16 in.; De Soto and North Platte, Neb. and Breckenridge, Minn., 0.18 in.; Boonsboro, Iowa, 0.20 in.; Fort Pembina, D. T. and Norfolk, Neb., 0.21 in.; Clear Creek, Neb., 0.25 in.

*Floods*.—Valley of the Sacramento, Cal.—During the latter half of January the Sacramento river gradually rose, reaching 22 ft. 3 in. above low water mark at Sacramento City on the 31st. It continued rising until the 5th of February, 2 a. m., when 24 ft. 11 in. was recorded, being one inch higher than any previous record, (highest heretofore 24 ft. 10 in., March, 1876.) Between 2.30 and 3 a. m. a break occurred in the levee on east bank of river, about one mile below Sacramento City, flooding an immense track of country in Sacramento county, and, by backing up, flooded all the southern portion of city on the 6th. After the 6th the river gradually fell until the 12th, when it commenced rising, the water being backed by the high southeast gales during the night of the 12th and 13th. At 3 p. m., 13th, 23 feet 11 in. was re-